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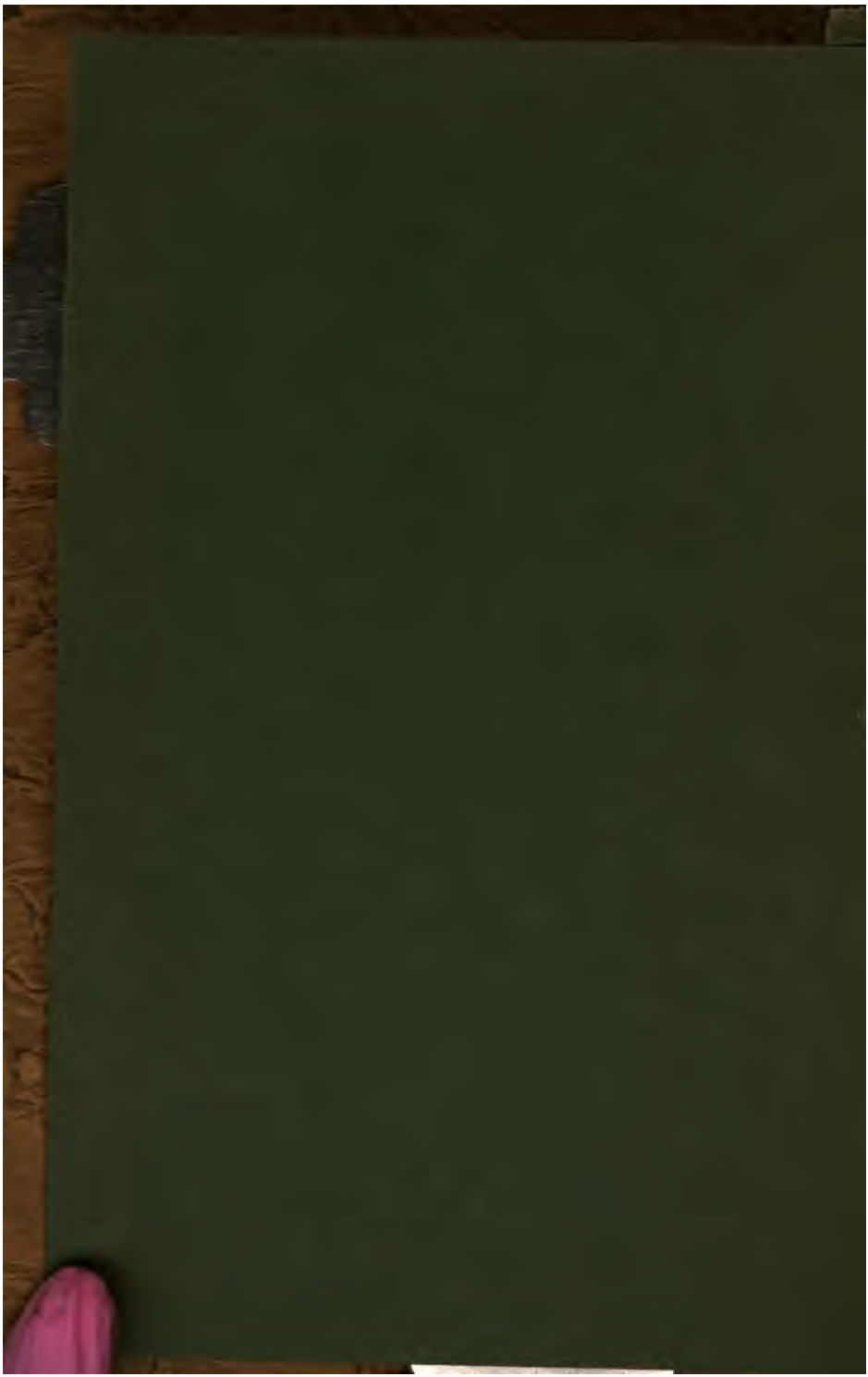

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# THE TONSIL AND ITS USES

## Vocal, Mechanic and Physiologic

BY

RICHARD B. FAULKNER, M. D. (Columbia University)

"The tonsil is an organ that must be respected" (*Lermoyez*)

"You have no right to destroy it" (*von Levinstein*)

"It is absolutely necessary in the modulation of the singing voice in crescendo and diminuendo" (*Lamperti*)

It is the sound-post in the mechanism of speech and song (*The Author*)

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# FOREWORD

The publication of my first book on this subject "THE TONSILS AND THE VOICE" led to such wide spread discussion of its contents, and to so many requests for more specific data regarding the treatment of tonsillar diseases without the knife, that in order to meet this demand, I felt it my duty to issue the second book, entitled "TONSILS AND ADENOIDS: TREATMENT AND CURE". This second volume met with a prompt and enthusiastic reception, and is amply proving the position taken in the first volume, namely, that the cutting of tonsils is unnecessary in over 92 per cent. of all cases, and that these are curable by safe and sane medical treatment.

The formulation of some original new views and the desirability of emphasizing in concise form, the fact, as set forth in my previous researches, that the tonsils have uses and functions which must not be recklessly interfered with, have led to the presentation of this third volume on "THE TONSIL AND ITS USES: Vocal, Mechanic and Physiologic."

# THE TONSIL AND ITS USES

## Vocal, Mechanic and Physiologic

**The tonsils**

The two tonsils in the back of the mouth, one on each side, are commonly called *the* tonsils. They are technically named the faucial tonsils, on account of their location in that part of the mouth known as the fauces.

**Normal anatomy**

The normal faucial tonsil is an organ that represents a type. A unity of opinion regarding the normal type is essential to an intelligent discussion of the organ. The anatomy and histology of the normal type, from the author's studies, are presented in detail, in his work upon "The Tonsils and The Voice."

**An intimate part of a natural throat**

The faucial tonsils resemble the cartilages of the larynx and trachea. But they are softer. They change with age in character, size, shape and consistence, but never disappear. They give firmness to the walls of the pharynx. They serve a purpose that hard, unyielding, osseous formations would not serve. They are mobile and compressible. They form an intimate part of a natural throat and possess a normal histologic structure.

**Remarkable characteristics**

The faucial tonsil has remarkable anatomical characteristics, not possessed by any other organ. Its external deep surface is *encased in a firmly adherent, strong, fibrous sheath.* Nothing like this sheath surrounds any other lymphatic body. So dense and tendinous and strongly adherent is this encasement that we may consider the organ as being practically armor-plated. *Contracting muscular fibres are inserted into the sheath,* derived from the superior constrictor muscle of the pharynx. The sheath sometimes sends *fibrous outrunners* along the walls of the blood vessels that run through the body of the

tonsil and into the folds of the mucosae. This dense musculo-fibro-aponeurotic sheath with its outrunners is too constant and definite to be looked upon as an atavism, nor can it be viewed as a simple anatomical accident. It is more reasonably a result of evolution to meet some physiologic demand. *There must be strong physiologic reasons for the existence of this powerful anatomical contrivance.*

**Equipped for mechanical service**

What are they? Why are muscular fibres from the superior constrictor muscle inserted into the aponeurotic sheath of the tonsil? Is the insertion of these fibres in a soft and movable body like the tonsil, designed to give freer action and to facilitate some special play upon the part of this muscle? Does the yielding tonsil serve some function to the superior constrictor which insertion in a bone would not? And has the action of the superior constrictor led to the development of the tonsil with its strong aponeurotic sheath? For what purpose does the sheath send fibrous outrunners along the walls of the blood vessels and into the folds of the mucosae? *Is not the tonsil armed and equipped for mechanical service?*

**Remarkable situation**

The anatomical situation of the organ is remarkable. It occupies a suspended position in the very center of a framework of curious, active and important muscles. The muscles of the fauces attract attention when at rest, by the remarkable bowed or arched appearance which they assume. They straighten when they contract. Whenever an arched faucial muscle straightens, the tonsil is either pulled or pushed. It is drawn inward toward the median line of the mouth, by the palato-glossus muscle, which curves outward while at rest. The palato-pharyngeous muscle, also, upon contracting and straightening, draws the tonsil inward. The tonsil is pressed toward the median line by the

superior constrictor of the pharynx. If a muscle embraces in its curve any yielding part, it will, in its effort to draw itself straight, push this yielding part out of its straightening way, thus exerting a sidewise force, as well as that lengthwise force which draws its points of attachment nearer together. Even if the embraced part is too firm to be actually displaced by the sidewise push of a curved muscle, yet this will be pushed upon and made more solid or dense. There is an infinitely varied and ceaseless play upon the faucial tonsils by the muscles of the fauces, pharynx, larynx, mouth and jaw.

**A fulcrum**

The faucial tonsil is a *fulcrum* for the muscles of the pharynx. It is also a *compressible* and *movable* fulcrum, *thereby gaining greater power.* The faucial tonsil is a *muscular compensator,* which supplies compensation by *change* in its *position,* and by change in its *pressure,* and by change in its *shape* when compressed. Also, by its *presence,* it *fills a cavity,* which, if unoccupied, would cripple compensation. Its an *idler.*

**Timbres of the voice**

"Every sound of the voice," according to *Manuel Garcia,* 1, (*) (London), "may assume an infinite variety of shades. Each of these is a timbre. The path of the sound being formed of elastic and movable parts varies the dimensions and forms in endless ways, and every modification, even the slightest, has a corresponding and definite influence on the voice."

*Dr. Frank E. Miller,* 2 (New York) says:

**Changes in pitch**

"There are seventy-four muscles and sixteen nerves capable of influencing various points of the vocal apparatus. The vocal tract of an accomplished singer is capable of some sixteen thousand adjustments and re-adjustments. So numerous are the adjustments in the shape of the voice tract that *Mara* could make *one hun-*

(*) Note: The figures in the text refer to references at the back of the book.

*dred changes in pitch between any two notes in her voice,* and as she had a compass of twenty-one notes, she could produce no less than *twenty-one hundred changes in pitch within a range of twenty-one notes.*"

**Larynx changes in form**

"With the emission of each note," according to *Professor Marage,* 3 (Director of the Course of Lectures at the Sorbonne), "the entire larynx, including the epiglottis, changes in form. To each note corresponds a special form of the entire organ. If to this is added the influence of the supra-laryngeal resonators, we comprehend the diversity of the tracings which are obtained for the same vowel. If the apparatus (for inscribing vowel sounds) inscribed everything, it is safe to say that there are no two sounds absolutely the same."

**Tonsils are mechanical organs**

That the faucial tonsil is a mechanical organ, and plays an important role in the mechanism of speech and song, is not to be doubted, but must, hereafter, be accepted as a matter of fact. Its mechanical utility is readily demonstrable, and as a mechanical organ of unique importance the faucial tonsil commands attention.

**Mechanical functions**

The tonsils assist in regulating the action of the faucial pillars; they support; they modify; they give exactitude and perfection to the movements of the pillars, unsurpassed in delicacy by the fingers of an artist upon the strings of a violin. For the production of the artistic tone in singing, the faucial tonsil is as necessary to the support of the bowed muscles of the faucial arch as the support of the bridge is to the strings of the violin. Toneless is the violin without the bridge. Artistically toneless is the faucial arch without the faucial tonsils. They support the tone by supporting the arch. They are an absolute necessity in the support of the arch in

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the modulation of the voice in crescendo and decrescendo. They soften the tone.

**Tonsils are muscular compensators**

As muscular compensators, they help to shape and re-shape the resonance cavities of the mouth, and change, direct or interfere with, the course of the vibrations of sound. They contribute to altering the timbre of the voice. They give to the timbre its *personal* quality, its *charm,* its *precious value. The colorings of the human voice* are as various and as marvelous as the crystals of frost in winter time upon a pane of window glass. These wonderful tints in vocal tone are directly due to the mechanism which produces them.

**Their absence impairs the mechanism**

The presence of the faucial tonsil being essential as a factor in voice mechanism, its absence necessarily interferes with the perfect action of the mechanism. Its absence impairs and weakens the mechanism.

**Phonetic defects follow removal**

The phonetic value of the faucial tonsil is proved by the phonetic defects which always follow after its removal. After its removal, there is *always a permanent loss* in its *personal quality,* and *personal charm; always a loss of sweetness in tone quality;* the tone seems *dispersed; it loses in clearness, exercise, color* and *facility; it lacks the usual brilliancy of resonance; crescendo and diminuendo are always affected and most often impossible.*

*After* removal, there is *difficulty in assuming the different shapes of the pharynx* necessary in singing, causing a *hardness* in *quality* and *laborious action;* there is *difficulty in supporting the tone* in *different registers;* the *tone is weakened; modulation difficult* and sometimes *impossible;* nasal tone common.

**Removal lowers the voice**

In accord with my personal observations, the removal of the faucial tonsil lowers the voice; tenors sometimes become baritones; sopranos become mezzo-sopranos; the quality of tone

throughout the range always becomes uneven, and a mixed quality of tenor and baritone ensues; support of the tone fails in certain registers, and an alteration in the compass occurs. Tenors who sang high C have been lowered to an A flat after removal of the tonsils. A clergyman sought my advice on account of an inability to discourse for a longer period of time than eight consecutive minutes at any one time, since his tonsils were removed. He cannot sustain the tone in public speaking. More than four years have passed since the enucleation, and there is no improvement. Another interesting case, under my observation, is that of a military officer, who was compelled to resign from the service on account of an inability to issue commands to the troops, after his tonsils had been removed. Five years have passed since they were removed, and his voice is no better.

**Mechanism is delicate and easily deranged**

The mechanism that produces precious tone is marvelously delicate, and finely poised. Its preservation requires intelligence, education, and eternal care. Speakers who shout, and singers who strain, will derange the mechanism.

Vocal methods influence the faucial tonsils. Some methods enlarge them. And some methods cause them to become painful. Tonsils vary greatly in size among singers and speakers.

**Large tonsils accompany beautiful voices**

When *Madame Cappiani* complained about her "red and big tonsils," her brother, *Frederick Young,* dramatic tenor for years at the Royal Court Opera in Munich, said that he had found in his career that all those prima donnas with extraordinary voices had big tonsils.

*Mme. Cappiani,* 4 (Milan) says: "The most beautiful voices have large tonsils."

*Dr. Neustaedter,* 5, a medical school inspector of New York, has reported that: "Among 8,000 pupils examined, tonsils are slightly more prevalent among the best pupils. ***The best singers***

*have* 50 *per cent. more tonsils than the poorest."*

*Professor Brieger,* 6, (University of Breslau) says: "People with enlarged tonsils are generally very healthy."

**Persons with enlarged tonsils are very healthy**

The size of the faucial tonsil is always the direct result of some physiologic demand. Cause and effect are always proportionate. The exact size, in every instance, is related to, and determined by, the needs of the individual. What power other than that of physiologic demand can possibly determine the size of a natural tonsil? If the faucial tonsil is a phagocytic organ, then an augmented phagocytosis will increase its size. If it is a mechanical organ, invested with muscular fibres, then the activity of these fibres, together with the action upon the organ of all the surrounding pharyngeal muscles, will certainly enlarge it, as certainly as exercise enlarges the blacksmith's arm.

**Singing and speaking congest the tonsil**

The act of singing and public speaking congests the tonsil, as well as manipulates it. Phonation massages the tonsil. It is pulled, pushed and compressed. May not a good singing or speaking method, by giving the tonsils exercise, lead to their healthy growth in size, as the natural response to their activity? The vocal method of singers and speakers, their habits of carefulness or carelessness in execution, and the general and continued environments under which they perform, all have an undoubted bearing upon the size and condition of the faucial tonsil. Does not the size of the tonsil directly indicate the physiologic requirement of the individual, and also depend upon the specific vocal method employed in each and every case; and that one method may cause a greater or lesser development than another, and yet these various methods be indicative of what is best for the different individuals? Therefore, *if this is true,* then, who can say that the tonsil is ever *too*

large, or *too* small, in the case of any particular artist?

*Professor Marage,* 7, has shown that:

"In the experiments in rooms of the Trocadero, Chapel of the Sorbonne, Academy of Medicine and Richelieu Amphitheatre, it is at once seen that in all these rooms bass voices have a great disadvantage, since they must employ an energy 7 to 16 times greater than a tenor voice: the baritone voices are intermediate, while approaching much closer the tenor voice. A tenor must expend four times more energy in the Trocadero than in the Richelieu Amphitheatre; on the contrary, a bass voice is obliged, according to the room, to give an energy nine times greater."

**Energy expended in singing**

May not singing or speaking constantly in rooms and auditoriums with varying acoustic qualities requiring the expenditure of varying amounts of energy, influence the development and size of the tonsils? Some vocalists tire more easily than others; some vocalize with more ease, and some with greater energy; some with greater power; some practice with regularity, and some at irregular intervals; all of these factors have a bearing upon the voice mechanism, and, necessarily, upon the character of the tonsils.

*Dr. Raoult,* 8, (Nancy), in an excellent paper on *"Du Choix du Procede pour L'Ablation des Amygdales,"* states that:

"The cicatrization of the operatory wound is slow: it lasts from 10 to 12 days at the minimum. While the scab is in place, the operated surface is almost non-sensible, during the first half day; but then, as it begins to fall towards the fifth or sixth day, it often becomes very painful and the pain sometimes lasts for four to five days. Finally, at the moment of the fall of the scab, secondary hemorrhages are not rare."

**Healing of wound after removal of tonsils**

The experience of *Raoult* is not exceptional.

**Pain and hemorrhage after removal are due to mechanical causes**

I mention it for the purpose of suggesting that both the pain and the frequent secondary hemorrhages that occur, after operations upon the faucial tonsil, are sometimes *due, partly or wholly, to mechanical causes, to the manipulation and massage of the organ by the muscles that surround it.*

**Tonsils are mechanical, acoustic and phonetic organs**

*The faucial tonsil is a mechanic, acoustic and phonetic organ.* This fact is not inconsistent with the belief that the organ may have, also, functions of a different nature; that it may possess physiologic and biologic functions, according to some savants.

**Masini's theory**

*Masini,* 9, (Genoa), "believes that the tonsil has an inner secretion similar to that of the suprarenal and other glands." He injected *many* animals with the extract of tonsil, and produced an increase of the arterial pressure. *Scheier,* 10 (Berlin) made analogous experiments by which he produced a decrease in arterial pressure. *Pugnat,* 11 (Brussels) repeated these experiments, but could not produce either increase or decrease in the arterial pressure. *Masini, Scheier* and *Pugnat* had all three different results. *Scheier and Pagnat* disagreed with each other, and they both disagreed with *Masini.* There were three different results by three different experimenters.

*Caldera,* 12 (Turin), in his research, has reported negative results following injection of tonsillar extract into animals.

*Masini* has had the same results in many cases, but *Scheier* and *Pugnat* having come to no conclusions, there is good reason why *Masini's* experiments should be repeated, under the identical circumstances as to the *strength, quantity* and *freshness* of the extract, as well as the exact physical conditions of the subjects to be experimented upon, as in the investigations conducted by *Masini* himself. That the tonsil has, or has

not, an internal secretion, is a question by no means settled. May it not, possibly, have a secretion, secondary or assistant to the other internal secretory glands; a secretion which ceases at about eighteen years of age? The fact that the faucial tonsil is of unusually large size in twenty per cent. of all persons from three to eighteen years of age, that is, during the period of the general growth of the body, is noteworthy and important. There must be some good physiologic reason for the enlargement.

**Escat's theory**

*Professor Escat,* 4, (Toulouse) believes that the tonsil secretes a principle useful in the development of the system, and *probably to the growth of the skeleton.*

*Professor Brieger,* 6, believes that the faucial tonsil is a protective organ. He says:

**A protective organ**

"It can be proved that lymphocytes in lesser or greater degree are always present in the epithelium of the tonsils. We have to assume a vehicle which carries the lymphocytes from the adenoid tissue. The cause of the movement of the lymphatic current is to be found," according to *Professors Brieger,* 13, and *Goerke,* 13 (University of Breslau), "in a difference of pressure in the afferent lymphatic vessels and the free surface. Increase of blood pressure increases the force of the lymphatic current. Therefore, if the blood pressure is increased, the lymphatic juice flows stronger and quicker through the epithelium, and carries along a larger amount of lymphocytes out of the adenoid tissue."

*Professor von Levinstein,* 13 (University of Berlin) says:

**Brieger's current theory**

"*Brieger* assumes a current which permanently flows through the whole organ from the inside to the outside and which carries along more or less lymphocytes. But nobody has seen this current, and *we are not entitled to see in the*

*histologic picture of the tonsil a proof for the existence of the current."*

**Closed lymphatic canals**

The blood supply to the faucial tonsil is scant. It possesses no nerve of sensation. It is peculiarly free of lymphatics, excepting a system of *closed lymphatic canals occupying the center of the tonsil* which *do not open into the connective tissue reticulum* by stomata nor by gaping extremities. It has no known connection with neighboring lymphatics, *through its surface.* The sheath of the tonsil is not perforated by lymphatics, nerves or bloodvessels.

There is no proof that it has any absorptive power. If it has no absorptive power, then, it is not a menace to the system.

Must we admit, without proof, that a lymphatic current flows through the faucial tonsil? Must we assume this for the sake of science?

**No absorptive function**

Admitting, only for the sake of argument, that a lymphatic current does flow through the faucial tonsil, as *Professor Brieger,* 13, claims, is it *necessary* to assume that it is forced through by the pressure of the blood? When we think of the powerful musculo-fibro-aponeurotic sheath that firmly envelopes the tonsil and which sends fibrous outrunners along the walls of the blood vessels that run through the body of the organ and into the folds of the mucosae, and then of the situation of the tonsil, amidst a framework of active muscles, the author asks:

**Faulkner's massage theory**

May not the transudation of lymphocytes and phagocytes from the inside of the tonsil to its epithelial surface, when these muscles are in action, take place upon the same principle and according to the same force in physics whereby milk comes to the surface in the process of the working of butter, and just as oil comes to the surface in the manipulation of putty? May not the appearance of lymphocytes and phagocytes upon the surface of the tonsil *be due entirely to*

*the mechanical massage of the organ,* and not at all due to any assumed lymphatic current, blood pressure or physiologic action whatsoever? *The act of singing and public speaking congests the tonsil, as well as manipulates it. Vocalization massages the tonsil. It is pulled, pushed and compressed.* May not the central system of closed lymphatic vessels *by mechanical pressure,* such as occurs in vocalization, *exude* lymphocytes?

**Keep the nose clean**

*Professor A. Jacobi,* 28, with his accustomed clinical acumen, emphasizes the fact that if there were more care exercised in keeping the passages of the nose clean, so many operations on the tonsils would probably not be necessary; not nearly so many as some gentlemen seem to think.

**Germs from the nose enter the tonsils**

*Professor B. Fraenkel,* 21, states that "if you inject Chinese Tusch (black color) under the lining of the nose of rabbits, dogs and hogs, you can show in a short time these color particles in the tonsils. After certain operations in the nose tonsillitis occurs. If we try to understand these observations, we must assume that germs from the nose have entered the tonsils; that the operation in the nose has opened the door through which the germs can advance by way of the lymphatic circulation to affect the tonsils. This idea affords for these infectious diseases another consideration. We now cannot think any more that they are caused by micro-organisms advancing through the mouth."

**Goerke sustains Jacobi and Fraenkel**

*Professor Goerke,* 13, agrees with *Jacobi* and *Fraenkel,* that "Infectious germs in the nose (after nasal operations) can be transported by way of the lymphatic vessels to the interior of the tonsils and there produce local symptoms."

**Tonsil Infections**

And *Professor von Levinstein,* 13, states that: "Tonsils are frequently affected in a *secondary*

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**are secondary to the nose**

way, after operations in the nose, by way of the lymphatic canals.

*Professor Poli,* 29, has proved that the lymphatic regions of both nostrils are connected by lymph channels which surround the free edge of the back of the nasal septum and at the front, though to a less degree, by vessels which pierce the septal cartilages. These are newly acquired facts in anatomy and are important.

**Nostrils are connected by lymph channels**

**Direct communication between the nose and the tonsil**

*Professor von Lenart,* 30, has proved the existence of a *direct communication* between the lining of the nose and the *interior* of the tonsil, by way of lymph channels.

**Direct communication between the interiors of both tonsils**

He has proved, *also,* the existence of a *direct communication,* by way of lymph channels, *between the interiors* of the two faucial tonsils.

**Von Lenart sustains Jacobi, Fraenkel and Levinstein**

*Von Lenart* has proved that the tonsil becomes infected from the invasion of germs from the nose, by way of the lymph channels. His data prove the correctness of the statements of *Jacobi, Fraenkel, von Levinstein,* and others. He assures us that infectious material is carried from the nose to the tonsil.

**Most's observations are confirmed**

*Von Lenart's,* 31, teaching confirms *August Most's* contention concerning the course of the lymph current in the nose and throat, which the latter arrived at through his anatomical studies.

**Septic material passes under the surface**

It therefore makes no difference as to how clean you keep the oral *surface* that covers the tonsil, septic material may pass from one tonsil to the other, *underneath* the mucous membrane that lines the mouth, by way of the lymph channels. This fact gives us a very different understanding from the common and false idea that the tonsils are full of holes, and that they are infected from matter that collects in the oral cavity and which, after having soaked through the lining of the mouth then soaks into the tonsil which lies underneath. Such a physiologic feat is impossible, 27.

**Tonsils are filters**

Tonsils are filters, 27. In all cases, where the tonsils are plainly visible, they can be seen to enlarge during attacks of common cold (acute inflammation) affecting the nasal passages. And in all such cases, after the nose has been cleansed and sterilized, 27, the tonsils will decrease in size. This decrease is often noticeable within an hour after cleansing and sterilizing. This alternate increase and decrease in size, I have observed in many cases. Tonsils filter filth that accumulates in the nose, 39.

**Tonsils are protective organs**

Tonsils are protective organs. They protect the general system from the invasion of germs. They protect the system from the infections of rheumatism, diphtheria, measles and other infectious diseases.

**When actively engaged, they swell**

When actively engaged in the process of filtration, tonsils always swell, and when thus enlarged, ignorant persons erroneously believe that the enlargement is a sign of disease. But it is only natural.

**Persons with large tonsils are healthy**

*Professor Brieger,* 32, states that: "Generally, people who have enlarged tonsils are very healthy."

**Children with large tonsils less easily infected**

*Professor Fraenkel,* 21, 13, 27, states that: "Children with large tonsils are less easily infected with diphtheria than children with small tonsils."

**Children with large tonsils are best protected**

Children with large tonsils are therefore best protected from infectious diseases and from invasion of filth of all kinds. *Children with large tonsils are always large, well grown and healthy.* 27, 39.

**Protection. Immunity**

The size of the tonsil, in children, is in direct proportion to the amount of protection demanded by the child. Subsequent involution, or decrease in size, is, as *Professor Goerke* 32, states, "an expression of immunity against certain infections, especially peculiar to childhood."

He also says, 33: "The tonsils are protective

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organs. After removal, they regrow in all cases. The regrowth, however, is not so large as the original tonsil. The same causes which led to the first enlargement, also lead to the new growth. These regrowths occur more often than we think, but we do not know about them. Patients don't talk about the return, because they don't want to be operated on again."

**After removal, tonsils regrow**

The regrowth appears to be nature's protest against removal. *But adjacent structures injured or destroyed in removal are not restored.*

**Bad results after removal**

*Professor Haymann,* 34, says: "Operations on the tonsils are looked on as being without danger. However, bad results do occur. As a rule, the habit of reporting bad results is not often followed."

**Diseased tonsils are not more liable to infection**

*Professor Grober,* 35, *says*: "Many authors have considered diseased tonsils as more liable to microbial infection than healthy ones. *If that is true, it has not been proven.*"

**Normal tonsils are not a source of infection**

*Professor Hicguet,* 36, wisely remarks that: "It seems evident that the hypertrophied *and diseased tonsil could not* come to the defense of the system, while the *normal tonsil could not* be a source of infection."

**Tonsils must be respected**

*Professor Lermoyez,* 37, says: "The normal tonsil is an organ that must be respected. How greatly would the number of operations on the tonsils diminish if only those which necessity imposed were performed."

**Author's conclusion**

*In conclusion*: While the future may prove new physiologic or biologic functions for the tonsil, it must be said that that surgeon who, at the present time, tears the tonsil from the throat as though it were a trivial matter, will find that its removal is always followed by an interference with, and generally by a permanent destruction of, values in the mechanism of the voice.

**Tonsil is a VOX POSTIS**

*The faucial tonsil is an integral part of a natural throat, A VOX POSTIS, or "SOUND-POST," in the mechanism of speech and song. It supplements a natural deficiency and completes the original mechanism engaged in voice production.*

**The tonsil protects the carotid artery**

*Acting as a buffer organ in swallowing and as a cushion, it protects from injury the internal carotid artery and other delicate parts that lie underneath. After the tonsil is removed, this important artery is permanently exposed to injury. These mechanical facts are important. And it is also important to remember that the process of swallowing food in aged people is sometimes slow, choking and embarrassing. This mechanical insufficiency is always more marked when tonsils have been removed.* 27.

**The tonsil supports the palatine arch**

*The tonsil assists in supporting the muscles of the palatine arch. It acts as a keystone.* After its removal, the pillars of the arch always sag, usually from a quarter to a third of an inch, the mechanism of the voice is damaged and the quality of the voice is impaired. Even after the extraction of a wisdom tooth, the arch often sags, and the voice becomes badly affected.

**Author's deductions:**

Based upon his studies concerning the mechanical utility of the faucial tonsil, the author is pleased to present the following deductions:

1. The faucial tonsil plays an important role in the mechanism of voice production.

This conclusion is supported by the teachings of *Garcia,* 1, *Signor Lamperti,* 4, *Mme. Cappiani,* 4, *Mme. Mott,* 4, *Mme. Clara Kathleen Rogers,* 4, *Alexander Graham Bell,* 14, *Marage,* 3, *Moure,* 4, (Bordeaux), *Escat,* 15 (Toulouse), *Van Baggen,* 4, and *Dr. Frank E. Miller,*.2.

2. The mis-use of the voice by an incorrect method in singing or speaking acts in a mechani-

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cal way in causing enlargement, or disease, of the tonsil.

This conclusion accords with the teachings of *Tosi,* 16, *Shakespeare,* 4, *Mme. Lilli Lehmann* 4, *Mme. Emma Seiler,* 17, *Castex,* 18 (*Paris*) and *Van Baggen,* 19.

3. Tonsils enlarged, or diseased, through a wrong method of voice production, may be cured by the institution of a correct method.

This conclusion is sustained by the teachings of *Tosi,* 16, *Shakespeare,* 4, *Mme. Lehmann,* 4, and *Mme. Seiler,* 20.

4. Tonsils that are swollen, tender and painful, caused by mis-use of the voice, will, in turn, by their abnormal condition, hinder the proper action of the voice mechanism, and this hindrance will be relieved by the proper use of the voice.

This conclusion harmonizes with the teachings of *Garcia,* 1, *Shakespeare,* 4, *Mme. Lehmann,* 4, *Mme. Seiler,* 20.

5. Removal of the normal faucial tonsil interferes with the natural mechanism of the voice.

The removal of the normal tonsil is strongly condemned by *Von Chiari,* 4, (Vienna), *Marage,* 3, *Lermoyez,* 4, (Paris), *Escat,* 15, *Fraenkel,* 21 (Berlin), *Van Baggen,* 4, *Von Levinstein,* 13, (Berlin), *Schmiegelow,* 4 (Copenhagen), *A. Jacobi,* 4, *Sir Felix Semon,* 4, 22, *Richard Loewenberg,* 4 (Berlin),*Garcia,* 1.27, *Signor Lamberti,* 4, *Mme. Cappiani,* 4, *Mme. Lehmann,* 4, *Mme. Mott,* 4, *Mme. Nordica,* 4, *Mme. Schumann-Heink,* 4, *George Ferguson* 4, *Sir Charles Santley,* 4, *Jean De Reszke,* 4, and *David Bispham,* 4.

6. The presence of the faucial tonsil being essential as a factor in voice production, its absence necessarily interferes with the perfect action of the mechanism.

7. The mere absence of the faucial tonsil impairs and weakens—and the presence of adhe-

sions, scars and contractions incidental to its removal, interferes with—the mechanism of the voice. Precious voices have the most delicate mechanism—the more delicate, the more easily it is thrown out of order.

This conclusion agrees with the experiences of *Sig. Sebastiani,* 4, (Naples), and *Loewenberg,* 4.

8. The natural mechanism of the voice can never be improved by surgical means. There are no times at which a voice user's throat requires radical treatment, or surgical operation, with any assurance of improving the voice.

Surgeons who promise that cutting the tonsils will enrich the voice, are promising just the contrary to the experiences of *Garcia,* 1, *Mme. Viardot-Garcia,* 27, *Lamperti,* 4, *Mme. Cappiani,* 4, *Signor Marchesi,* 23, *Mme. Lehmann,* 4, *Mme. Adelina Patti,* 4, *Mme. Nordica,* 4, *Mme. Schumann-Heink,* 4, *Mme. Von Klenner,* 4, *Mme. Mott,* 4, *Signor Sebastiani,* 4, *Richard Loewenberg,* 4, and *David Bispham,* 4.

9. Beautiful voices accompany large tonsils. "The most beautiful voices have large tonsils," was the statement made to the author by *Mme. Cappiani,* 4. And her brother, *Frederic Young,* 24, dramatic tenor of the *Royal Court Opera,* in Munich, found that "all prima-donnas with extraordinary voices had big tonsils."

Among 8,000 school children, examined by *Dr. Neustaedtler,* 5, of New York, "tonsils were largest in the best pupils, and the best singers had fifty per cent. more tonsils than the poorest."

10. Enlarged tonsils in experienced professional singers should never be removed. The larger the tonsil the more it should be let alone. This conclusion is in strict accord with the teachings of *Von Chiari,* 4, 25, *Mme. Lehmann,* 4, and *John Howard,* 26 (Boston).

11. Persons who have large tonsils are generally very healthy.

The fact that twenty per cent. of all persons between three and eighteen years of age have unusually large tonsils is evidence that such enlargement is not accidental. Mere size is *no* indication of disease. A large tonsil in a large mouth is normal: whether it is out of proportion depends upon individual circumstances. Conversely, it may be normal in structure, *and yet be too small to properly perform its mechanical functions* in speech and song. That those persons who have large tonsils are generally very healthy, is the firm declaration of *Brieger,* 6, *Georke,* 13, and *Fraenkel,* 21.

**Author's final deductions**

The foregoing deductions from the experience of the author, supported as they are by preeminent authority, assure us that the faucial tonsils are natural organs, and that their existence, as well as their variations in physical character, are due to physiologic demands. All the diseases which have been attributed to their presence, as a matter of course exist, but have nothing to do with them. Stupidity, retarded and impaired mental faculties, rheumatism, heart disease, frog-face, pigeon-breast, and so forth, require some other explanation than the presence of the tonsils. To the same degree that we have gained in our knowledge of the anatomy and functions of the tonsil, the organ has lost its unmerited reputation as a cause of disease.

**Tonsils must be respected, protected and preserved**

Nothing should more excite interest in and stimulate further study of the organ than the variety of vocal and mechanical functions, which have now been ascribed to it. *Every new ray of light thrown upon the subject serves more thoroughly to confirm its mechanic, acoustic, and phonetic functions. The clinical and anatomic studies of Jacobi, Fraenkel, Goerke, von Levinstein, Poli, von Lenart, Most, Brieger, Grober*

*and Hicquet have firmly established its physiologic importance. Upon the facts presented in this treatise, I trust that hereafter the vocal, mechanic, and physiologic functions will become more clearly recognized and the tonsil more respected, protected and preserved.*

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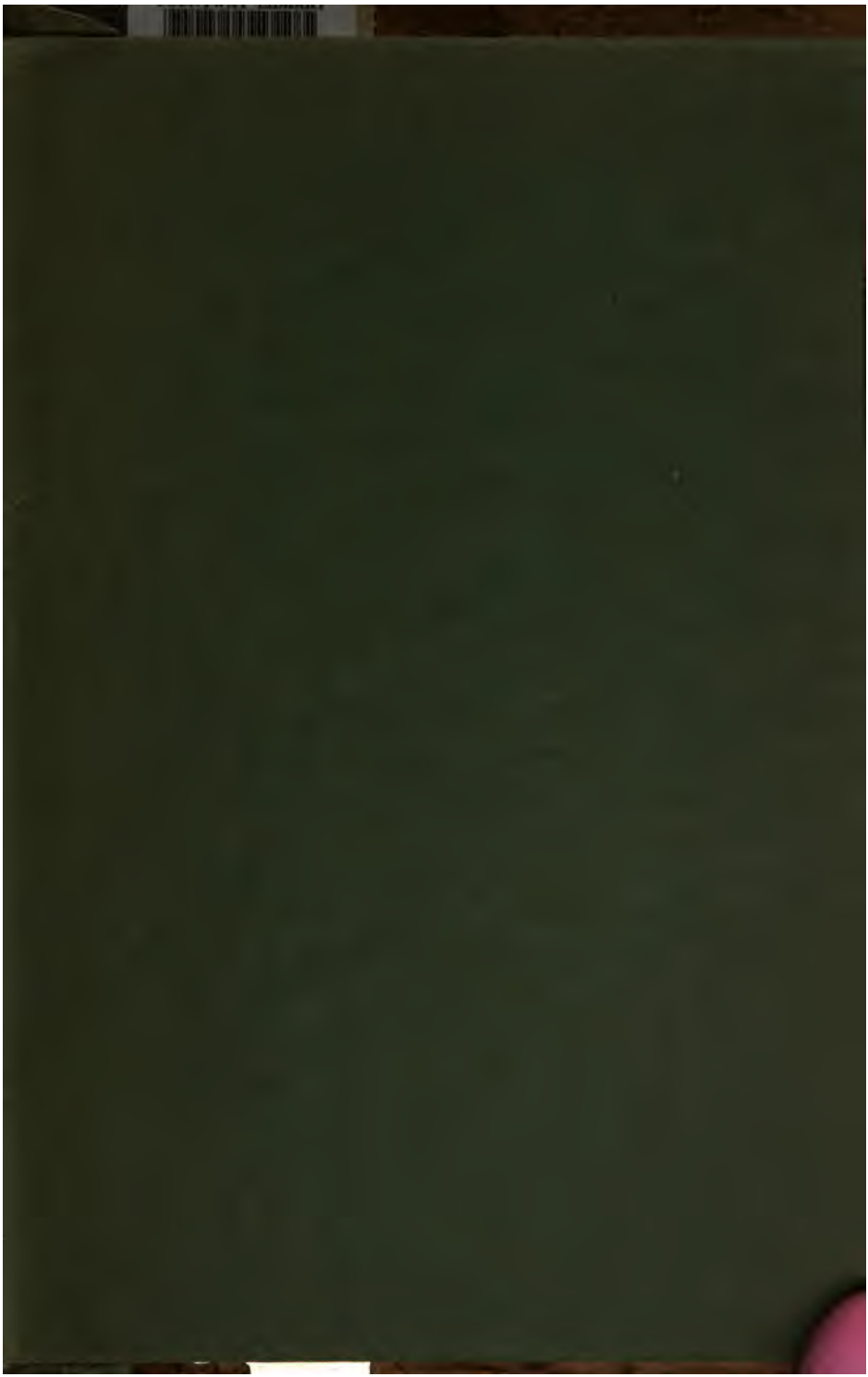

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